CLC/TC22X/Sec0144/REP

BUSINESS PLAN

CENELEC/TC or SC	Secretariat	Date
TC 22X	France	2014-01-13

TC 22X Power electronics

A Background

TC 22X is the CENELEC Technical Committee (CLC/TC) that is responsible for all standards on power electronic converters. All aspects like definitions, naming conventions, safety aspects (electrical, thermal, energy and functional) for their applications, insulation, testing, system integration, energy management and efficiency and electromagnetic compatibility are included.

Product related basic standards applicable to all kinds of power electronic converters are under direct responsibility of CLC/TC 22X. CLC/TC 22X also covers important product groups. Characteristic for most of these product groups is the dominance of the power electronic converter within the product/system. For such products the committee covers also the system aspects.

The unique CLC/TC 22X covers the overall standardization activities managed by IEC/TC 22 and its subcommittees 22E, 22F, 22G and 22H at international level. The following parts of this Business Plan are mainly coming from the standardization objectives described at IEC for the Power Electronics' committee. But especially, CLC/TC 22X prepares standardization work, as requested by the European Commission through standardization Mandates in order to comply in appropriate way and time to the requirements of European Directives. Generally, and when possible, the standardization is prepared at the IEC level under the Dresden agreement between CENELEC and IEC. But dedicated standardization work can be conducted at European level in order to covering specific topic for power electronics. For instance Power Electronics is considered as an important leverage for answering the European 2020 Renewable Energy Road Map. Power Electronics can help for reaching the overall mandatory target by reducing the EU energy consumption by 20 %, producing total EU energy from renewable energy sources, and to reduce by 20 % the greenhouse gas emissions.

The group safety function of CLC/TC 22X also covers many aspects of power electronic converters incorporated in systems, which are covered by separate technical committees. CLC/TC 22X is prepared to start standardization work for new fields of applications and is also open for an active cooperation with other Technical Committees dealing with products or systems incorporating power electronic converters.

B Business Environment

B.1 General

The 2010 worldwide market size for discrete power semiconductor devices and modules has been estimated to 12 billion Euros. Power semiconductors typically represent about 15 % of the value of a power electronic converter, i.e. market size for power electronic converters can be estimated to be in the range of 85 billion Euros. The largest product market within are power electronic converters for variable speed drives.

Multiple large, medium size and small companies are active in the market. The rapid growth of the business has encouraged the start-up of new companies and also countries to invest heavily into their own industries active in the field.

B.2 Market demand

The established companies and organizations expect from CLC/TC 22X the coverage of new products. All the new and rapidly growing companies require a well maintained basic set of standards that open the globalized markets to their products.

B.3 Trends in technology

New power semiconductors, but also new materials for passive power electronic components are one driver for new types of power electronic converters. On the other hand emerging standards on electromagnetic compatibility especially for conducted noise are also driving the use of new topologies like multi-level power electronic converters or their application as devices for harmonics control in

electrical power supply systems. Another driver is the requirements on energy efficiency and to further increase the productivity of their applications like in variable speed driven systems.

The monolithic or hybrid combination of mechanical and electrical systems (mechatronic systems) are getting more and more in the focus of the industries in order to reduce cost and volume and to increase the reliability. This is a future aspect which needs to be prepared and covered in a reasonable way also for power electronic systems.

B.4 Market trends

Driven by the general public policy targets for reducing greenhouse gas emission, the utilization of renewable energy resources, improved ways to store electrical energy and better use of the transmission and distribution systems by smart grid operation, requires power electronic converters. The same is true for electric and hybrid cars. Power Electronics is the key enabling technology for the future electrical energy market. It has also been noted that an increasing trend exists towards utilizing power electronics in applications where functional safety is a consideration. An example of the fast growing power electronic business can be found in HVDC transmission: Current total capacity of commissioned HVDC projects alone exceeds 100 GW. Some more HVDC projects with the total capacity of about 300 GW are planned to be commissioned by 2020.

B.5 Ecological environment

Power electronics is the enabling technology for reducing the energy consumption of most of the industrial processes, for building facilities or for infrastructures management systems while converting energy (e.g. electrical energy to mechanical energy or vice versa). Therefore it is also an enabling technology for the utilization of regenerative energy resources.

B.6 Involvement of societal stakeholders

TC 22X participates to many CEN-CENELEC European Standardization initiatives, as well as European Commission initiatives where non standardization stakeholders are also involved. Particularly CLC/TC 22X committee follows some EU preparatory studies under the regulation process where societal stakeholders are also involved. CLC/TC 22X is ready to maintain and increase relationship with different partners.

B.7 Involvement of SMEs

Standardization contribution to CLC/TC 22X is mainly coming from industry representatives, members of professional associations like, Cemep, Orgalime, in which SMEs could also participate. SMEs are also able to participate actively to the CLC/TC 22X standardization activities thanks to the collaboration tools of CEN-CENELEC that CLC/TC 22X systematically uses now during new project development.

C System approach aspects

Committees which are customers of CLC/TC 22X (our product is part of their system) **C**
Committees that are suppliers to CLC/TC 22X (their product is part of our system) **S**
Other Committees (partner committees, committees providing generic guidance, etc.) **O**

Cenelec Organization		**CLC/TC 22X**
CLC/SR 1	Terminology	O
CLC/TC 2	Rotating machinery	S
CLC/SR 3	Information structures, documentation and graphical symbols	O
CLC/TC 7X	Overhead electrical conductors	S
CLC/TC 8X	Systems aspects for electrical energy supply	C
CLC/TC 11	Overhead electrical lines exceeding 1 kV a.c. (1,5 kV d.c.)	S
CLC/TC 14	Power transformers	S
CLC/TC 17AC	High-voltage switchgear and controlgear	S
CLC/TC 17B	Low-voltage switchgear and controlgear	S

CLC/SR 17D	Low-voltage switchgear and controlgear assemblies	C
CLC/TC 20	Electric cables	S
CLC/TC 21X	Secondary cells and batteries	S
CLC/TC 23BX	Switches, boxes and enclosures for household and similar purposes, plugs and socket outlets for d.c. and for the charging of electrical vehicles including their connectors	S
CLC/SR 28	Insulation co-ordination	O
CLC/TC 31	Electrical apparatus for potentially explosive atmospheres	C
CLC/SR 32	Fuses	S
CLC/SR 32B	Low-voltage fuses	S
CLC/SR 33	Power capacitors and their applications	S
CLC/TC 36A	Insulated bushings	S
CLC/SR 36B	Insulators for overhead lines	S
CLC/SR 36C	Insulators for substations	S
CLC/SR 37	Surge arrestors	S
CLC/TC 37A	Low-voltage surge protective devices	S
CLC/TC 38	Instrument transformers	S
CLC/SR 40	Capacitors and resistors for electronic equipment	S
CLC/TC 44X	Safety of machinery - Electrotechnical aspects	C
CLC/SR 47E	Discrete semiconductor devices	S
CLC/TC 48	Electromechanical components and mechanical structures for electronic equipment	S
CLC/TC 57	Power system management and associated information exchange	C
CLC/TC 59X	Performance of household and similar electrical appliances	C
CLC/TC 61	Safety of household and similar electrical appliances	C
CLC/TC 62	Electrical equipment in medical practice	C
CLC/TC 64	Electrical installations and protection against electric shock	O
CLC/TC 65X	Industrial-process measurement, control and automation	O
CLC/SR 66	Safety of measuring, control and laboratory equipment	C / S
CLC/TC 69X	Electrical systems for electric road vehicles	C
CLC/SR 70	Degrees of protection provided by enclosures	O
CLC/SR 73	Short circuit currents	O
CLC/TC 82	Solar photovoltaic energy systems	C

CLC/TC 88	Wind turbines	C
CLC/SR 89	Fire hazard testing	O
CLC/SR 91	Electronic assembly technology	S
CLC/SR 96	Transformers, reactors, power supply units, and combinations thereof	O
CLC/TC 99X	Power installations exceeding 1 kV a.c. (1,5 kV d.c.)	C
CLC/SR 104	Environmental conditions, classification and methods of test	O
CLC/SR 105	Fuel cell technologies	C
CLC/TC 108X	Safety of electronic equipment within the fields of Audio/Video, Information Technology and Communication Technology	C / S
CLC/SR 109	Insulation co-ordination for low-voltage equipment	O
CLC/TC 111X	Environment	O
CLC/SR 112	Evaluation and qualification of electrical insulating materials and systems (to be defined)	O
CLC/SR 114	Marine energy - Wave and tidal energy converters	C
CLC/SR 115	High Voltage Direct Current (HVDC) Transmission for DC voltages above 100kV (Provisional)	C
CLC/SR 117	Solar thermal electrical plants	C
CLC/SR 118	Smart grid user interface	O
CLC/SR 119	Printed electronics	S
CLC/TC 210	Electromagnetic Compatibility (EMC)	C/O/S

D Objectives and strategies (3 to 5 years)

To establish a seamless covering of energy management and energy efficiency requirements for power electronic converters and systems.

To determine the needs for appropriate standardization of power electronics in a mechatronic environment.

To review the structure of the committee in order to adapt it effectively to future requirements.

To scan the globalized European market requirements and determine the need of further standardization of power electronic systems.

To determine and avoid overlapping of standardization tasks with other technical committees.

To monitor the outcome of discussion on LV d.c.

E Action plan

To discuss the needs and actions according to clause D during the next plenary meeting.

To establish more and more the modern IT tools for standardization work to reduce travelling cost.

To proceed with the development of common safety requirements for the standards for power electronic converters and systems by completing the EN 62477 series with a standard for medium voltage converters (EN 62477-2). In addition, to collect comments on EN 62477-1 Ed. 1 for the purpose of maintenance of this standard expected to be started in 2013 at IEC level.

To establish a TC 22 standard for the technical requirements on power electronic systems related to smart grid applications by results of the work of maintenance team 8 for Active In-feed Converters (EN 62578).

To include requirements on energy efficiency for power electronic systems and equipment into the standards of CLC/TC 22X until 2015. (EN 50598 series)

To include requirements on environmental impact of power electronic systems and equipment into the standards of CLC/TC 22X based on the results of CLC/TC 22X/WG 6 Task Force 2 after the standard EN 50598-3 has been published.

To consider the outcome from IEC/SC 22E Plenary meeting establishing a new scope for Converters and Systems involved in the field of GCPC (Grid Connected Power Converters) including stabilized power supplies (SPS) under the aspects of future technology and market trends.

F Useful links to CENELEC web site

CLC/TC 22X home page giving access to Membership, TC/SC Officers, Scope, Publications, Work programme [password-protected area].

Martial Patra
(CLC/TC 22X Secretary)